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ABSTRACT

This longitudinal study examined the experiences of out-of-home preschool child care to performance and adjustment in elementary school. Subjects were 145 children in Goteborg, Sweden, who were on average 16 months of age when they were enrolled in this study. Within 4 weeks of enrollment in the study, 54 children began center-based day care, 36 began family-based day care, and 55 remained in the care of their parents. Children's verbal abilities were assessed using the Griffiths developmental scale, and Caldwell's home inventory for measurement of the environment (HOME) was completed when children were 40 months old. Home and school visits were conducted again prior to enrollment in elementary school and in second grade. Objective tests of intellectual performance were administered, maternal and teacher ratings of children's adjustment were collected, and the HOME inventory was completed again. Results revealed no significant differences between children with different child care histories. Intellectual performance and ratings of adjustment were instead related to earlier measures of cognitive abilities, HOME inventory scores, and gender. (MM)

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EFFECTS OF DAY CARE ON ELEMENTARY SCHOOL PERFORMANCE AND ADJUSTMENT

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EFFECTS OF DAY CARE CARE ON ELEMENTARY SCHOOL PERFORMANCE AND ADJUSTMENT

Abstract

145 children, living in the city of Göteborg, Sweden, were enrolled in this longitudinal study of the effects of child care on children's development when they averaged 16 months of age. Within four weeks of enrollment in the study, 54 of the children began in centre based day care, 36 began in family based day care whereas 55 children remained in the care of their parents. Children's verbal abilities were assessed using Griffiths developmental scale, and assistants filled out Caldwell's HOME inventory when children were 40 months old. Prior to enrollment in elementary school, and when children were in 2nd grade, families were visited again. Objective tests of intellectual performance were administered, maternal and teacher ratings of children's adjustment were collected and assistants filled out Caldwell's HOME inventory.

No significant differences were found between children with different child care histories. Intellectual performance and ratings of adjustment were instead related to earlier measures of cognitive abilities, HOME-scores and gender.

The Göteborg Child Care Project

The 'Gothenburg child care study' is a longitudinal study of the effects of different forms of child care on children's development, taken into account other significant factors, like child, family and day-care characteristics.

Data were gathered in two major waves. The first comprised phases 1, 2 and 3, which occurred when our subjects averaged 16, 28 and 40 months of age, respectively. The second wave comprised phase 4, when our subjects were 6 1/2 years old, and phase 5 when the subjects were 8 1/2 years old on average.

The main constructs which we have studied over the different phases include:
* inhibition
* social competence
* personality development
* language development
* compliance
* social adjustment
* father involvement

The aim of the study reported here was to relate experiences of out-of-home care in toddlerhood and during the pre-school years to performance and adjustment in elementary school. For a brief description of how out-of-home care in Sweden is organized the reader is referred to the appendix.

Methods

Subjects

Names of children on the waiting lists for municipal child care facilities were obtained from local authorities in all areas of the city of Göteborg from June 1982 to October 1983. Parents were individually contacted and invited to participate in the research. To be enrolled in the study, the child had

to fullfill the following criteria:

(i) be between twelve and twenty-four months of age,
(ii) be firstborn, or at least not living with siblings under twelve years of age,
(iii) live with both parents, whether or not they were married.

In addition children should not have begun regular day care, and should not have had more than a total of four weeks of out-of-home care prior to our first visit to the family. Finally, parents had to speak enough Swedish to understand questionnaires and interview questions.

Hollingshead (1975) scores showed that children came from a range of socio-economic backgrounds.

Of the 145 families who agreed to participate, 136 children completed the first three phases (i.e., when they averaged 16, 28 40 months of age), 128 participated also in phase 4 (when children were 6 1/2 years old) and 123 (59 boys and 64 girls) participated in phase 5 (when children were 8 1/2 years old).

Procedure

When our subjects were 16 months old, on average, their parents were interviewed and filled out several questionnaires. The children were also observed at home. Two weeks later, some children entered into center-based public day care, others entered into family day care, whereas some remained in parental care. One and two years later, the families and the out-of-home care facilities were visited again. Children's verbal abilities were assessed, and assistants filled out Caldwell's home inventory for measurement of the environment.

Prior to enrollment in elementary school (phase 4), and when children were in second grade (phase 5), children were again visited at home in day care/kindergarten (phase 4) and in elementary school (phase 5). Assistants tested the children's cognitive abilities, filled out Caldwell's HOME, and parents and teachers were interviewed about the children's development and adjustment to the elementary school. Teachers' also rated the children's socio-emotional adjustment using a rating scale used in earlier research on the effects of out-of-home care on later adjustment (Andersson, 1989).

Measures

Verbal ability — In phase 3 (when children averaged 31/2 years of age) verbal ability was assessed using the language subscale (the C-scale) of Griffiths (1970) Developmental Scales, one of the most widely used measures of intellectual performance in young European children. Children were tested individually in their homes by a research assistant. Prior to their entry into the elementary school system, when children were 6 1/2 years old on average, the verbal subscale of a standardized measure of a school readiness test used in Swedish schools (Ljungblad, 1967/1988) were given to the children individually in their homes by a research assistant (not the one who had tested the child three years earlier). In elementary school, verbal ability was measured using three different measures. First, each child's word and sentence recognition capacity was tested individually by a research assistant using standardized measures, then the child's ability to understand written language was tested by letting the child read a story and then answer a number of questions related to its content. The three different measures were combined into one measure of 'tested verbal ability'. The teacher was also asked to rate the child's capacity to (1) read and (2) write and these measures were combined into one scale of 'teacher-rated verbal ability' (1 = much below average , 3 = average and 5 = much above average). Finally, mothers were also asked to rate the children's capacity to (1) read and (2) write. These measures were combined into one scale of 'mother-rated verbal ability', similar to the one used by the

teachers.

Mathematical ability — Prior to their entry into the elementary school system, when children were 6 1/2 years old on average, the mathematical subscale of a standardized measure of a school readiness test used in swedish schools (Ljungblad, 1967/1988) were given to the children individually in their homes. In elementary school, each child's knowledge of numbers, arithmetic and her/his capacity to solve mathematical problems was tested individually by a research assistant using standardized measures. The different measures were combined into one measure of 'tested mathematical ability'. The teacher was also asked to rate the child's capacity in mathematics, as was the mother (1 = much below average , 3 = average and 5 = much above average).

Gymnastic ability — In elementary school, teachers and mothers were asked to rate the child's ability in gymnastics on a 1 to 5-point scale (1 = much below average , 3 = average, and 5= much above average).

School adjustment — In elementary school, teachers and mothers were asked to rate the child's adjustment to (a) peers in school and (b) rules and regulations in school on two 1 to 5-point scales (1 = much below average , 3 = average and 5 = much above average). Teachers also filled out a questionnaire which has been used in earlier studies on school adjustment by Andersson (1989, p. 861). It contains eight subscales, of which only six showed satisfactory reliability in this study: (1) Persistence and independence (alpha = .93), (2) Social confidence (alpha = .85), (3) Short temper and impulsivity (alpha = .81), (4) Peer contacts (alpha = .89), (5) Verbal facility (alpha = .79), (6) Attentiveness vs. distractibility (alpha = .84).

Child care history — Of the 120 children, 24 had been in consistent home care during infancy, toddlerhood and the preschool years, 24 had been in center based day care since they averaged 14 months of age, whereas only 6 children had been consistently in family based day care. The remaining children had various changes between different forms of child care during their toddler and preschool years. All analyses of the effects of child care history were run twice. First, t-tests were performed using only the children with consistent home care and center based day care. Second, ANOVAS were performed using 5 different categories (1 = consistent home care, 2 = consistent out-of-home care, 3 = consistent care (home or out-of-home) between 16 and 40 months of age but at least one change between 41 and 86 months, 4 = at least one change between 16 and 40 months of age but consistent care (home or out-of-home) between 41 and 86 months, 5 = at least one change between 16 and 40 months of age and at least one change between 41 and 86 months.

Family background was tapped using maternal and paternal Hollingshead scores — weighted sums of education and occupation scores for each parent — computed as instructed by Hollingshead (1975). The possible range is from 8 to 66, with the higher scores denoting higher social status.

The quality of home care was tapped using Caldwell's Home Inventory. In phases 3 and 4, observers completed four subscales of the pre-school version — IV (Pride affection and warmth), VI (modelling and encouragement of social maturity, VII (variety of stimulation) and VIII (physical punishment) — as instructed by Caldwell & Bradley (1984). Scores of the four subscales were combined into a single index for analytic purposes. In phase 5 the elementary school version was used, but only subscales 1 (Emotional and verbal responsivity), 2 (Encouragement of maturity) and 3 (Emotional climate) could be combined into a reliable composite (Cronbach's alpha =.70). In addition, subscales 4 (Growth fostering materials and experiences) and 7 (Paternal involvement) were used.

Results

I. Care history and gender based differences

We found no significant differences in grade 2, either in school performance or in rated adjustment, between children with different child care histories, whether we used t-tests to compare two groups [consistent Home care (n=24) versus consistent Centre based day care (n=24)], or with ANOVAS to compare children with 5 different child care histories. MANOVAs showed only one significant interaction using child gender and care history as independent variables. Overall, teachers rated girls somewhat higher on gymnastic ability than boys ($M_{girls} = 3.33$, $M_{boys} = 3.02$, $t_{99df} = -2.31$, $p<.05$). This was true also for children with a history of consistent center based day care ($M_{girls} = 3.64$, $M_{boys} = 2.73$). For children with a history of consistent home care, however, girls were rated lower than boys ($M_{girls} = 2.92$, $M_{boys} = 3.43$).

There were a number of other gender based differences. None of these, however, interacted with child care history.

There were no gender based differences on objective tests of verbal or mathematical ability, but girls were rated higher on verbal ability by their teachers ($M_{girls} = 3.72$, $M_{boys} = 3.35$, $t_{106df} = -2.12$, $p<.05$), and by their mothers ($M_{girls} = 3.95$, $M_{boys} = 3.68$, $t_{121df} = -1.96$, $p<.05$).

Teachers and mothers rated girls' general adjustment to the class-room situation higher than boys' adjustment (Teachers: $M_{girls} = 3.70$, $M_{boys} = 3.25$, $t_{106df} = -3.11$, $p<.001$; Mothers: $M_{girls} = 4.09$, $M_{boys}=3.69$, $t_{121df}=-2.48$, $p<.01$).

Teachers also rated girls higher than boys in 'Persistence and independence' ($M_{girls} = 4.10$, $M_{boys} = 3.58$, $t_{113df} = -3.78$, $p<.001$), 'Social confidence' ($M_{girls} = 3.64$, $M_{boys} = 3.29$, $t_{113df} = -2.08$, $p<.05$) and 'Verbal facility' ($M_{girls} = 4.46$, $M_{boys} = 4.13$, $t_{113df} = -2.24$, $p<.05$). Finally, teachers rated boys as more easily distracted and less attentive than girls ($M_{girls} = 2.08$, $M_{boys} = 2.38$, $t_{113df} = 3.15$, $p<.001$).

II. Relation between elementary school performance and adjustment and other background factors.

To explore the relations between (1) earlier measures of verbal and mathematical ability, (2) home quality, (3) parental socio-economic status and (4) the teachers' ratings of the children's adjustment to the transition from pre-school to elementary school on the one hand, and our measures of school performance and adjustment in second grade on the other, a series of stepwise regression analyses were performed. However, because the rating of adjustment in grade 1 was made by the same teacher who did the other ratings and at the same time, it was not used as a predictor in the regression equations for any of the teacher ratings.

Verbal ability; Objective test scores of verbal ability were only predicted by earlier objective measures of cognitive ability. When children were 8 1/2 years old, 29% of the variance on tested verbal ability was explained by a combination of verbal test scores at ages 3 1/2 (most prominent predictor) and 6 1/2. The teachers' ratings of the children's ability to read and write were predicted by earlier verbal test scores and by the 'Paternal involvement' subscale (negative relation) of the

elementary school version of Caldwell's Home inventory (R^2 = .18). Mothers' ratings of children's ability to read and write were predicted by verbal test scores at age 31/2 and by the combined subscales 1 to 3 ('Emotional and verbal responsivity', 'Encouragement of maturity' and 'Emotional climate') of the elementary school version of Caldwell's Home inventory (R^2 = .18).

Mathematical ability; Mathematical test scores at 8 1/2 years of age, were predicted by mathematical and verbal test scores at age 6 1/2 (R^2 = .15). The teachers' ratings of the children's mathematical ability were only predicted by the 'Paternal involvement' subscale (negative relation) of the elementary school version of Caldwell's Home inventory (R^2 = .05). Mothers' ratings of children's mathematical ability were only predicted by the teachers' rating of the child's adjustment in first grade (R^2 = .08).

Gymnastic ability; The teachers' ratings of children's gymnastic ability were only predicted by earlier mathematical test scores (negative relation) (R^2 = .07). Mothers' ratings of children's gymnastic ability were predicted by the 'Paternal involvement' subscale (positive relation) and by the combined subscales 1 to 3 ('Emotional and verbal responsivity', 'Encouragement of maturity' and 'Emotional climate') of the elementary school version of Caldwell's Home inventory (R^2 = .09).

Global ratings of adjustment; Teachers' ratings of children's global adjustment to the classroom situation in grade 2 was only predicted by verbal testscores at age 6 1/2 (R^2 = .04). Teachers' ratings of children's relationships to peers in grade 2 was only predicted by the 'Paternal involvement' subscale (negative relation) of the elementary school version of Caldwell's Home inventor (R^2 = .07). Mothers' ratings of children's global adjustment to the classroom situation (R^2 = .20) and to peers in grade 2 (R^2 = .11) were predicted by verbal testscores at age 6 1/2 and by the elementary school teacher's rating of the child's adjustment in grade 1. Mothers' rating of global adjustment was also predicted by the total score of the Caldwell's Home inventory at age 6 1/2.

Teacher ratings of socio-emotional adjustment; Of the six subscales of teacher ratings of children's socio-emotional adjustment (R^2 = .10 to .19), four were related to the 'Paternal involvement' subscale of the elementary school version of Caldwell's Home inventory and to the total family Hollingshead score. 'Persistence and independence' was negatively related to 'Paternal involvement' and positivily to total family Hollingshead scores whereas the relations were reversed for 'Short temper' and 'Peer contacts' and 'Distractible rather than attentive'. 'Persistence and independence' was related o the combined subscales 1 to 3 ('Emotional and verbal responsivity', 'Encouragement of maturity' and 'Emotional climate') of the elementary school version of Caldwell's Home inventory. 'Social confidence' was predicted by the number of life events between 3 1/2 and 6 1/2 years of age and by verbal test scores at 6 1/2 years of age. 'Verbal facility' scores were only predicted by verbal test scores at 3 1/2 years of age.

References

Andersson, B-E. (1989). Effects of public day-care: A longitudinal study. *Child Development*, **60**, 857-866.

Notes:

VERBABTEST	= Verbal ability measured by objective tests
VERBABTE	= Verbal ability as rated by teacher
VERBABMO	= Verbal ability as rated by mother
MATHABTEST	= Mathematical ability measured by objective tests
MATHABTE	= Mathematical ability as rated by teacher
MATHABMO	= Mathematical ability as rated by mother
GYMABTE	= Gymnastic ability as rated by teacher
GYMABMO	= Gymnastic ability as rated by mother
ADJCLMO	= Adjustment to class rules and regulations rated by mother
ADJPEMO	= Adjustment to peers rated by mother
ADJCLTE	= Adjustment to class rules and regulations rated by teacher
ADJPETE	= Adjustment to peers rated by teacher
Pers/Ind (Q1)	= Persistence and independence rated by teacher
Soc conf (Q2)	= Social confidence rated by teacher
Short temp (Q3)	= Short temper and impulsivity rated by teacher
Peer cont (Q4)	= Peer contacts rated by teacher
Verb fac (Q5)	= Verbal facility rated by teacher
Distr (Q6)	= Distractibility vs. attentiveness rated by teacher

Numbers 3, 4 & 5 refers to phase of study (i.e. when children were 31/2, 61/2 and 81/2 years old respectively)

Table 1. Pearson correlations between dependent variables

	VERB5								
VERBAB5TEST	1.00	VERB5TE							
VERBAB5TE	.63***	1.00	VERB5MO						
VERBAB5MO	.55***	.57***	1.00	MAT5					
MATHAB5TEST	.49***	.45***	.33***	1.00	MAT5TE				
MATHAB5TE	.34***	.55***	.23*	.44***	1.00	MAT5MO			
MATHAB5MO	.08	.14	.25**	.41***	.44***	1.00	GYM5TE		
GYAB5TE	-.14	-.03	-.11	-.03	.14	.10	1.00	GYM5MO	
GYAB5MO	-.15	-.05	-.01	-.07	.01	.09	.31***	1.00	Q1
PERS (Q1)	.48***	.61***	.49***	.48***	.47***	.40***	.17	-.06	1.00
SOC CONF(Q2)	.26**	.26**	.30**	.23**	.29***	.22*	.24*	.14	.45***
SH TEMP (Q3)	-.04	-.06	-.05	-.06	-.06	.02	-.08	.18	-.29***
PEER CON(Q4)	-.14	-.19	-.12	-.14	-.19*	-.06	-.26**	-.11	-.47***
VERB FAC(Q5)	.32***	.27**	.36***	.23**	.04	.17	-.00	-.05	.49***
DISTR (Q6)	-.25**	-.24*	-.17	-.23**	-.15	-.07	-.02	.12	-.46***
ADJPE2GT	.28***	.33***	.14	.18	.29***	.07	.20*	.00	.33***
ADJCL2GT	.23*	.43***	.19*	.21*	.44***	.13	.23*	.08	.37***
ADJPE2GM	.11	.09	.17	.13	.22*	.22*	.11	.28***	.22*
ADJCL2GM	.16	.11	.35***	.18*	.08	.21*	.11	.24**	.29***

	Q2								
SOC CONF(Q2)	1.00	Q3							
SH TEMP (Q3)	.00	1.00	Q4						
PEER CON(Q4)	-.33***	.36***	1.00	Q5					
VERB FAC(Q5)	.43***	-.01	-.22*	1.00	Q6				
DISTR (Q6)	-.09	.53***	.32***	-.21*	1.00	ADJPETE			
ADJPE2GT	.38***	-.29***	-.61***	.21*	-.23***	1.00	ADJCLTE		
ADJCL2GT	.28***	-.27**	-.23*	.20*	-.33***	.45***	1.00	ADJPEMO	
ADJPE2GM	.27***	-.12	-.44***	.05	.01	.36***	.20	1.00	ADCLM
ADJCL2GM	.19*	-.13	-.14	.19*	-.23**	.16	.35***	.27***	1.00

Table 2. Pearson correlations between independent variables

	VERBAB3								
VERBAB3	1.00	VERBAB4							
VERBAB4	.40***	1.00	MATHAB4						
MATHAB4	.28***	.27***	1.00	FAMHOLT5					
FAMHOLT5	.20*	.26***	.22**	1.00	HOME3_TO				
HOME3_TO	.37***	.34***	.26***	.33***	1.00	HOME4_TO			
HOME4_TO	.11	.27***	.17*	-.09	.35***	1.00	HOME5_13		
HOME5_1 to 3	.02	.24**	.09	.05	.20*	.36***	1.00	HOME5_4	
HOME5_4	.06	.16	.28***	.27***	.22**	.21*	.17	1.00	HOME5_7
HOME5_7	-.03	-.06	-.01	.01	.14	.20*	.17	-.08	1.00
ADJ1GTE	-.15	.06	.07	.10	.01	.01	.08	.09	-.22*

VERBAB = Tested verbal ability
MATHAB = Tested mathematical ability
FAMHOLT = Family Hollingshead score
HOME_TO = HOME inventory total score
HOME_1 to 3 = HOME inventory score subscales 1 to 3
HOME_4 = HOME inventory score subscale 4 (Growth fostering materials and experiences)
HOME_7 = HOME inventory score subscale 7 (Paternal involvement)
ADJ1GTE = Adjustment in first grade as rated by teacher

Correlations between dependent and independent variables.

Table 3 Measures of verbal competence

	VERB5TEST	VERB5TE	VERB5MO
VERBABTEST3	.45***	.28***	.31***
VERBABTEST4	.41***	.28***	.29***
MATHABTEST4	.30***	.14	.25**
FAMHOLT5	.19*	.10	.07
HOME3_TO	.24**	.10	.17*
HOME4_TO	.09	.02	.13
HOME5_1 to 3	.11	.15	.24**
HOME5_4	.13	.06	.18
HOME5_7	-.08	-.26**	-.09
ADJ1GT	.07	.13	.13

Stepwise regression analysis

VERB5TEST R^2= .29 F= 23.41 (Vars.: VERBABTEST3 & VERBABTEST4)

VERB5TE R^2= .18 F= 7.33 (Vars.: VERBABTEST3 & VERBABTEST4 & HOME5_7)

VERB5MO R^2= .15 F= 10.57 (Vars.: VERBABTEST3 & HOME5_1 to 3)

Table 4. Measures of mathematical ability

	MATH5TEST	MATH5TE	MATH5MO
VERBABTEST3	.25**	.02	.02
VERBABTEST4	.30***	.16	.17
MATHABTEST4	.29***	.07	.22**
FAMHOLT5	.19*	-.06	.11
HOME3_TO	-.02	-.05	.00
HOME4_TO	.03	-.00	.03
HOME5_1 to 3	.09	.09	.08
HOME5_4	.12	.03	.18*
HOME5_7	-.16	-.22*	.04
ADJ1GT	.12	.25**	.26**

Stepwise regression analysis

MATH5TEST R^2= .15 F= 10.04 (Vars.: MATHABTEST4 & VERBABTEST4)

MATH5TE R^2= .05 F= 5.30 (Vars.: HOME5_7) [ADJ1GT not included]

MATH5MO R^2= .08 F= 7.63 (Vars.: ADJ1GT)

Table 5. Measures of gymnastic ability

	GYM5TE	GYMAB5MO
VERBABTEST3	-.18	-.06
VERBABTEST4	-.08	.12
MATHABTEST4	-.27**	-.14
FAMHOLT5	-.05	.07
HOME3_TO	-.09	.11
HOME4_TO	-.07	.12
HOME5_1 to 3	.07	.24**
HOME5_4	-.07	.08
HOME5_7	.02	.22**
ADJ1GT	.29***	-.03

Stepwise regression analysis

GYM5TE R^2= .07 F= 7.88 (Vars.: MATHABTEST4) [ADJ1GT not included]

GYM5MO R^2= .09 F= 6.02 (Vars.: HOME5_7 & HOME5_1 to 3)

Table 6. Global ratings of ajustment to peers and to class

	ADCL5MO	ADPE5MO	ADCL5TE	ADPE5TE
VERBABTEST3	.21*	.18*	.10	.15
VERBABTEST4	.34**	.24**	.21*	.19*
MATHABTEST4	.11	.01	.10	.13
FAMHOLT5	.12	.05	.15	.03
HOME3_TO	.32***	.25***	.09	.11
HOME4_TO	.31***	.20*	.19*	.07
HOME5_1 to 3	.28***	.26***	.18	.06
HOME5_4	.12	.10	.10	.05
HOME5_7	-.01	-.05	-.03	-.27***
ADJ1GT	.24*	.24*	.31***	.36***

Stepwise regression analysis

ADJCL5MO R^2= .20 F= 7.42 (Vars.: VERBABTEST4, HOME4_TO & ADJ1GT)

ADJPE5MO R^2= .11 F= 6.01 (Vars.: VERBABTEST4 & ADJ1GT)

ADJCL5TE R^2= .04 F= 4.87 (Vars.: VERBABTEST4) [ADJ1GT not included]

ADJPE5TE R^2= .07 F= 8.42 (Vars.: HOME5_7) [ADJ1GT not included]

Table 7. Teacher ratings of socio-emotional adjustment

	Pers/Ind	Soc conf	Short temp
VERBABTEST3	.14	.17	.08
VERBABTEST4	.23**	.19*	-.11
MATHABTEST4	.25**	.19*	-.06
FAMHOLT5	.22*	-.14	-.18*
HOME3_TO	.14	.03	-.04
HOME4_TO	.11	.10	-.01
HOME5_1 to 3	.18*	.08	.06
HOME5_4	.23*	.10	-.03
HOME5_7	-.21*	-.12	.26***
ADJ1GT	.51***	.43***	-.33***

Stepwise regression analysis [ADJ1GT not included]

Pers/Ind R^2= .14 F= 5.63 (Vars.: HOME5_7, HOME5_13 & FAMHOLT5)

Soc conf R^2= .11 F= 6.71 (Vars.: LEVENTS4 & VERBABTEST4)

Short temp R^2= .10 F= 6.28 (Vars.: HOME5_7 & FAMHOLT5)

	Peer cont	Verb fac	Distract
VERBABTEST3	-.09	.32***	-.19*
VERBABTEST4	-.04	.17	-.16
MATHABTEST4	-.08	.34***	-.10
FAMHOLT5	-.18	.21*	-.27***
HOME3_TO	-.08	.20*	-.11
HOME4_TO	.01	-.00	.03
HOME5_1 to 3	-.15	.02	.06
HOME5_4	-.05	.15	-.05
HOME5_7	.30***	-.00	.33***
ADJ1GT	-.51***	.19	-.30***

Stepwise regression analysis [ADJ1GT not included]

Peer cont R^2= .12 F= 7.73 (Vars.: HOME5_7 & FAMHOLT5)

Verb fac R^2= .11 F=13.60 (Vars.: VERBABTEST3)

Distract R^2= .19 F=12.84 (Vars.: FAMHOLT5 & HOME5_7)

Appendix — *The Swedish Child Care System*

Sweden has a parental leave system that enables infants to be cared for by either of their parents, and there exists a commitment, at both national and local levels, to provide public day care for children to parents who return to work or studies after a period of parental leave.

The Paid Parental Leave Act is designed to ensure that children and parents have at least a year-long period together under financially secure conditions. The Act also contains sections that are intended to make it easier for working parents to look after their children when they are ill and to enable parents to have contacts with their children and their careproviders.

In Sweden, public day care is supervised by the authorities. To qualify for state grants, municipal day care has to comply with guidelines enforced by the National Board of Health and Welfare (Socialstyrelsen). One of the consequences of Sweden's national family policy is a remarkable homogeneity of Swedish day care, by international standards, which enables researchers to control for some of the factors that otherwise would have to be dealt with as independent variables in the research design. This is especially true for formal aspects of day care quality (i.e., group-size, teacher-child ratio, teacher training, equipment etc.).

Another important aspect of the Swedish child care system is the relative lack of confound between family- and child care factors. Such confounds poses a major research problem in many countries, where well situated parents can afford to give their children "the best day care money can buy", whereas families from other social strata have to make do with low quality day care. In Sweden almost all children (90%) in out-of-home care are in public day care. Because all families who want municipal day care must que for it, the only confound between family factors (such as SES) and the quality of day care therefore depends on social segregation — families from similar social strata tend to live in the same areas and thus have their children in day care centers and family day care homes in these areas.

Day care centers are built explicitly for their purpose; they are spacious, well equipped, and have rooms for gross, as well as fine motor behavior, a corner for games involving water, and most often also a "cosy corner" where children can sit and read etc.. Staffing is also regulated. Children under four are most often assigned to "toddler groups", with twelve children and three to four staff members, at least one of whom is a preschoolteacher and the others are children's nurses. Some centers have "extended sibling groups", where the age of the children spans from one to six years of age. These groups normally contain fifteen children, and have three staff members, although staff density can be higher if a group contains many children under the age of three. The average staff density, according to the latest estimate by the Swedish Association of Local Authorities was 4 children per adult.

Family day care homes (i.e., when a woman is paid for taking care of other children in her own home) are subject to fewer regulations than are day care centers. Day mothers are employed by the municipalities, and in order to receive full monthly payment, they must care for four children on a full-time basis, in addition to any of their own children. In some municipalities, including Göteborg, it is now increasingly common for four to six daymothers in a housing area to bring their children together regularly in special premises. The group activities take place once a week or so and make it possible to organize games and activities that might be unsuitable in a home environment. Since children get to know other family day care providers and "their" children in this way, it is also easier to substitute if one of the daymothers should fall ill or need to take time off.

For a more detailed description of the Swedish child care system see Broberg and Hwang (1991).

Broberg, A. & Hwang, C.P. 1991. Day care for young children in Sweden. In E.C. Melhuish & P. Moss (Eds.), Day care for young children: International perspectives (75-101). London: Tavistock/Routledge.